

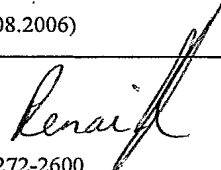
## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference P70496WO0		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US05/01871	International filing date (day/month/year) 21 January 2005 (21.01.2005)	Priority date (day/month/year) 23 January 2004 (23.01.2004)	
International Patent Classification (IPC) or national classification and IPC IPC: <b>G06K 9/00</b> ( 2006.01) USPC: 382/124,129			
Applicant SALVA CALCAGNO, EDUARDO LUIS			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>2</u> sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>			
Date of submission of the demand 18 January 2006 (18.01.2006)		Date of completion of this report 30 August 2006 (30.08.2006)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/ US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer Utpal D. Shah  Telephone No. 571-272-2600	

Form PCT/IPEA/409 (cover sheet)(July 1998)

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US05/01871

**I. Basis of the report**1. With regard to the **elements** of the international application:\*

- ☐ the international application as originally filed.
- ☒ the description:  
pages 1-38 as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the claims:  
pages 40-41 and 43 as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages 39 and 42, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the drawings:  
pages 1-22 as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
pages NONE as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/US05/01871**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>6,9-11 and 13-17</u>	YES
	Claims <u>1-5,7,8,12,18 and 19</u>	NO
Inventive Step (IS)	Claims <u>6,7,10,11 and 13-16</u>	YES
	Claims <u>1-5,7,8,9,12 and 17-19</u>	NO
Industrial Applicability (IA)	Claims <u>1-19</u>	YES
	Claims <u>NONE</u>	NO

**2. CITATIONS AND EXPLANATIONS**

Please See Continuation Sheet

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

**V. 2. Citations and Explanations:**

Claims 1,2,3,4,5,7,8,12,18,19 an inventive step under PCT Article 33(3) as being obvious over Valliani (PCT Publication WO 99/64979 or (PCT/US99/10893)).

In regards to claim 1, Valliani discloses a Person identification system characterized by converting fingerprints and genetic codes into barcodes, including these steps:

obtaining a fingerprint by a digital device (Figure 3 item 150);

plotting the digital image of a print onto a predetermined alphanumeric two-dimensional grid or stencil in segments with the measurements identified by letters and/or numbers (page 11 lines 30-39);

classifying the print into one of the possible existing groups (Figure 3 items 130,140, 150,160);

subclassifying the print according to the classification to which it belongs (page 9 lines 1-10);

determining the characteristic points of the fingerprint and coding in the alphanumeric information (page 9 lines 1-10); and

converting the alphanumeric code obtained into barcodes using conventional methods (Figure 3 items 180 to 200 item 40).

In regards to claim 3, Valliani discloses the step of linking the barcode obtained to the rest of the person's information (Figure 3 item 120).

In regards to claim 4, Valliani discloses the alphanumeric grid is three-dimensional (pages 9-11).

In regards to claim 5, Valliani discloses the step for determining the characteristic points of the fingerprint and coding them into alphanumeric information is done taking into consideration the specific square of the grid the characteristic point is found (pages 11 lines

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## Supplemental Box

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30-39).

In regards to claim 7, Valliani discloses procedure permits checking a person's identity through the following steps:

providing the form with an organic safety seal (Figure 3 items 155);

providing a personal identification method with a printed barcode (page 10 lines 20-30);

reading the barcode printed on the means of identification using a barcode reader (page 10 lines 20-30);

using the software to bring up on screen all of the information corresponding to the barcode read by the reader (page 10 lines 20-30);

obtaining the fingerprint of the person using a digital medium (page 11 lines 28-39);

using the software to generate an alphanumeric character chain and comparing it to the chain corresponding to the print that was previously stored in the database (page 11 lines 28-39);

wherein if both alphanumeric character chains match, it ends the verification procedure by verifying that it is the same person, otherwise the software will generate a notice reporting that the chains do not match and it is not the same person (page 12 lines 1-8).

In regards to claim 8, Valliani discloses this procedure lets a person be identified by a fingerprint and involves the following steps:

obtaining a person's fingerprint using a digital medium (Figure 3 items 150);

using the software to classify and generate a chain of alphanumeric characters and check whether the chain already exists by comparing it to the chains of that same subgroup that were previously stored in the database (pages 12 lines 1-8);

wherein if the software finds that the chain corresponding to the inputted print, the identification process ends and it is corroborated that it is the same person and the computer brings up on screen the information entered that the operator is requesting, otherwise the software generates a notice informing that the chain of alphanumeric characters obtained is not entered in the database showing that it involves an undocumented person (page 14 lines 5-20).

In regards to claim 12, Valliani discloses the two-dimensional grid is variable in the width and height of its rows and columns (page 9 lines 35-39).

In regards to claim 18, Valliani discloses a series of devices or apparatus that are interrelated, a digital medium to capture images (Figure 3 item 150), a computer containing the information system (Figure 3 item 180), a database, a barcode laser reader, and a printer (Figure 3 item 200).

In regards to claim 19, Valliani discloses the database engine can be in a server (page 14 lines 25-35).

Claims 2 & 9 an inventive step under PCT Article 33(3) as being obvious over Valliani (PCT Publication WO 99/64979 or (PCT/US99/10893)) in view of Leaton et al (U.S. Publication 2003/0085274).

In regards to claim 2, Valliani teaches a system for receiving bio-metric data from an individual and converting the data into a two-dimensional bar code. The barcode is printed on a piece of paper which can be scanned for verification purposes of the individual.

The difference between the claims and Valliani is the claims recite "obtaining the genetic code of a person by any intrusive or non-intrusive method; and converting the code obtained (alphabetic character chain) into barcodes using conventional methods."

Leaton teaches a system to create a unique bar code by bio-metric data into a barcode, the bio-metric data is collected from DNA samples similar to that of Valliani. In addition, Leaton further teaches obtaining the genetic code of a person by any intrusive or non-intrusive method (paragraph 12); and converting the code obtained (alphabetic character chain) into barcodes using conventional methods (paragraph 37).

It would have been obvious to one of ordinary skill in the art, having the teachings of Valliani and Leaton before him at the time the invention was made, to modify the bio-metric data taught by Valliani to include the bio-metric data from DNA of Leaton, in order to obtain a system that creates a unique barcode depending on the type of bio-metric data from fingerprints, DNA, facial recognition or etc.

One would have been motivated to make such a combination because create an improved method of authentication of the individual, as taught by Leaton.

In regards to claim 9, Valliani teaches a system for receiving bio-metric data from an individual and converting the data into a two-dimensional bar code. The barcode is printed on a piece of paper which can be scanned for verification purposes of the individual.

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

The difference between the claims and Valliance is the claims recite "performing a DNA analysis on the person to be identified using any intrusive or non-intrusive method; once the genetic code is obtained entering it into the computer system; using the software to search the database for the alphabetical character chain corresponding to that genetic code and checking to see whether it is already in the system by comparing it to the alphabetic chains previously stored in the database; wherein if the software finds the chain corresponding to the genetic code entered, the identification process ends, and it is corroborated that it is the same person and information is brought up on screen requested about this person, otherwise the software generates a notice reporting that the alphabetic character chain of the genetic code is not in the database, which shows that it involves an undocumented person. "

Leaton teaches a system to create a unique bar code by bio-metric data into a barcode, the bio-metric data is collected from DNA samples similar to that of Valliani. In addition, Leaton further teaches performing a DNA analysis on the person to be identified using any intrusive or non-intrusive method (paragraph 27); once the genetic code is obtained entering it into the computer system (paragraph 27); using the software to search the database for the alphabetical character chain corresponding to that genetic code and checking to see whether it is already in the system by comparing it to the alphabetic chains previously stored in the database (paragraph 5); wherein if the software finds the chain corresponding to the genetic code entered, the identification process ends, and it is corroborated that it is the same person and information is brought up on screen requested about this person (paragraph 4 lines 8-13), otherwise the software generates a notice reporting that the alphabetic character chain of the genetic code is not in the database, which shows that it involves an undocumented person (paragraph 17 & 19).

It would have been obvious to one of ordinary skill in the art, having the teachings of Valliani and Leaton before him at the time the invention was made, to modify the bio-metric data taught by Valliani to include the bio-metric data from DNA of Leaton, in order to obtain a system that creates a unique barcode depending on the type of bio-metric data from fingerprints, DNA, facial recognition or etc.

One would have been motivated to make such a combination because create an improved method of authentication of the individual, as taught by Leaton.

Claims 17 an inventive step under PCT Article 33(3) as being obvious over Valliani (PCT Publication WO 99/64979 or (PCT/US99/10893)) in view of Wendt (U.S. Publication 2003/0118218).

In regards to claim 17, Valliani teaches a system for receiving bio-metric data from an individual and converting the data into a two-dimensional bar code. The barcode is printed on a piece of paper which can be scanned for verification purposes of the individual.

The difference between the claims and Valliani is the claims recite "segmenting each image eliminating the pixels that do not pertain to the print; improving the image by eliminating noise; performing a quality analysis of the print, and an determined quality index is obtained, if it is the right one, the image is processed as follows: searching on the core of the print; binarizing the image where black pixels represent ridges and white ones the valleys; calculating the local placement of ridges and valleys; calculating the general orientation of the print; configuring the grid and its central point is inserted in the center of the image; numbering and lettering the grid and each square is assigned a character graphically displaying the image resulting from inserting the grid onto the fingerprint."

Wendt teaches identifying a fingerprint image and detecting ridges and curves to recognize individual similar to that of Valliani. In addition, Wendt further teaches segmenting each image eliminating the pixels that do not pertain to the print (Figure 13); improving the image by eliminating noise (Figure 19); performing a quality analysis of the print, and an determined quality index is obtained, if it is the right one, the image is processed as follows: searching on the core of the print (paragraph 225); binarizing the image where black pixels represent ridges and white ones the valleys (paragraph 119); calculating the local placement of ridges and valleys (paragraph 119); calculating the general orientation of the print (paragraph 203); configuring the grid and its central point is inserted in the center of the image (paragraph 280); numbering and lettering the grid and each square is assigned a character (Figure 13) graphically displaying the image resulting from inserting the grid onto the fingerprint.(Figure 13, Figure 29)".

It would have been obvious to one of ordinary skill in the art, having the teachings of Valliani and Wendt before him at the time the invention was made, to modify the imaging the fingerprint taught by Valliani to include the calculating the edges ridges, and curves of Wendt, in order to obtain a system the scan a fingerprint and then calculates the unique identification by plotting the ridges and curves of the finger.

One would have been motivated to make such a combination because an improved method of scanning fingerprints, as taught by Wendt.

----- NEW CITATIONS -----

CLAIMS

- 1) Person identification system characterized by converting fingerprints and genetic codes into barcodes, including these steps:
- 5 obtaining a fingerprint by a digital device;  
plotting the digital image of a print onto a predetermined alphanumeric two-dimensional grid or stencil in segments with the measurements identified by letters and/or numbers;  
classifying the print into one of the possible existing groups;
- 10 subclassifying the print according to the classification to which it belongs;  
determining the characteristic points of the fingerprint and coding in the alphanumeric information; and  
converting the alphanumeric code obtained into barcodes.
- 15 2) The person identification procedure according to claim 1, wherein if a person needs to be identified by his DNA, including the following steps:  
obtaining the genetic code of a person by any intrusive or non-intrusive method;  
and  
converting the code obtained (alphabetic character chain) into barcodes.
- 20 3) The person identification procedure according to claim 1, including the step of linking the barcode obtained to the rest of the person's information.
- 4) The person identification procedure according to claim 1, wherein the alphanumeric grid is three-dimensional.
- 25 5) The person identification procedure according to claim 1, wherein the step for determining the characteristic points of the fingerprint and coding them into alphanumeric information is done taking into consideration the specific square of the grid the characteristic point is found.
- 6) The person identification procedure according to claim 1, wherein the
- 30 procedure includes steps prior to inputting the information into the database consisting of the following steps:

AMENDED SHEET

chain of the genetic code is not in the database, which shows that it involves an undocumented person.

10) The person identification procedure, according to claim 6, wherein the fingerprint that is captured digitally is not taken as a whole, but rather is  
5 plotted on a two-dimensional grid, and one alphanumeric chain is obtained for each square.

11) The person identification procedure according to claim 6, wherein the three-dimensional method is used to code the full fingerprint from a partial print.

10 12) The person identification procedure according to claim 1, wherein the two-dimensional grid is variable in the width and height of its rows and columns.

13) The person identification procedure according to claim 6, wherein the search the software performs is based only on certain characteristic points of  
15 the alphanumeric code.

14) The person identification procedure according to claim 6, wherein the search the software does is by scanning only certain squares searching out matching points.

15) The person identification procedure, according to claim 6, wherein  
20 the search the software performs is done by combining just certain characteristic points of the alphanumeric chain in specific squares.

16) The person identification procedure according to claim 13, wherein from a partial print the software reconstructs the entire print found in matches of specific characteristic points.

25 17) The person identification procedure according to claim 1, wherein prior to the classification and subclassification steps, there are prior steps comprising a complete dactyloscopic analysis of the whole image of the fingerprint, said steps involving segmenting the image obtained, dividing the image containing several fingerprints into several separate images each  
30 containing a fingerprint are added, and each of them is worked individually according to the following steps:

segmenting each image eliminating the pixels that do not pertain to the print;

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